

### REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.116, and in light of the remarks which follow, are respectfully requested.

By the foregoing amendments, claim 11 has been amended to replace the phrases "an ethylene/ $\alpha$ -olefin copolymer comprising ethylene and C<sub>3</sub> to C<sub>10</sub>  $\alpha$ -olefin", "the ethylene/ $\alpha$ -olefin copolymer" and "an ethylene/ $\alpha$ -olefin copolymer comprising ethylene and C<sub>3</sub> to C<sub>10</sub>  $\alpha$ -olefin" with --an ethylene/1-butene copolymer--, --the ethylene/1-butene copolymer--, and --an ethylene/1-butene copolymer--, respectively. Claim 16, last line, has been amended to add the phrase "wherein no phosphorous-based flame retardant is contained" after "polyhydric alcohol". Support for the amendment to claim 11 may be found in the working examples. Support for the amendment to claim 16 may be found throughout the specification, especially at page 4, lines 17-27 and page 5, lines 6-10. Accordingly, no new matter has been added. Claims 11 and 13-21 remain pending in this application.

In the Official Action, claim 11 and 13-15 were finally rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,214,924 to Bieser et al for the reasons set forth in paragraph (4) thereof. Claims 11 and 13-15 were finally rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,232,377 (Hayashi et al) for the reasons discussed in paragraph (5) of the Office Action. Claims 16-21 were finally rejected under 35 U.S.C. §103(a) as obvious over Japanese Patent Document No. JP 09-221567 (Kensho et al) for the reasons presented in paragraph (7) of the Action. Reconsideration and withdrawal of these rejections are requested for at least the following reasons.

Bieser et al '924 discloses a plasticizer-free polyethylene composition comprising:

(A) from about 5 weight percent to about 70 weight percent of at least one homogeneous ethylene/  $\alpha$  -olefin interpolymer having:

- (i) a density from about  $0.85 \text{ g/cm}^3$  to about  $0.92 \text{ g/cm}^2$ ,
- (ii) a molecular weight distribution ( $M_w/M_n$ ) of less than about 3.5,
- (iii) a melt index ( $I_2$ ) of from about 0.1 grams/10 minutes to about 175 grams/10

minutes,

- (iv) a CDBI of greater than about 50 percent;

(B) from 30 weight percent to 95 weight percent of at least one filler; and

(C) from 0.1 weight percent to less than 10 weight percent of at least one functionalized polyethylene (see claim 1)

Bieser et al '924 also discloses in column 8, line 46 through column 9, line 11, a list of functionalized polyethylenes. However, Bieser et al fails to specifically disclose a graft-modified ethylene/1-butene copolymer (C) as defined in claim 11 of the present invention. Thus, the present invention as now claimed involves combining (A-1) an ethylene/1-butene copolymer with (C) a graft-modified ethylene/1-butene copolymer.

In the accompanying Declaration Under 37 C.F.R. §1.132, an additional Comparative Example has been provided. This Example clearly shows that when a commercially available ethylene/octene copolymer as the (A-I) component and maleic anhydride graft modified product thereof as the (C) component were blended to form a thermoplastic resin composition which is a preferred embodiment in Bieser et al '924, the resultant composition was inferior in torsional rigidity and flexibility such as elongation at break as compared to a thermoplastic resin composition which is within the scope of present claim 11 as shown in Examples Y1-1 and Y2. Accordingly, Bieser et al '924 neither anticipates nor renders obvious the subject matter of present claim 11. In view of the

foregoing, the §102(b) rejection of claims 11 and 13-15 should be withdrawn. Such action is earnestly requested.

Hayashi et al '377 discloses a flame retardant composition comprising (A) about 50-95 wt% of at least one specific ethylene copolymer, (B) about 5-50 wt% of an ethylene/  $\alpha$  -olefin copolymer having specific properties, (C) about 2-50 parts by weight of a polyethylene modified with a functional group containing compound, (D) about 5-2 50 parts by weight of a metal hydrate, (E) about 1-12 parts by weight of a triazine ring containing compound, and (F) 0.5-5 parts by weight of a flame retardant compound selected from the group consisting of a boron compound, a molybdenum compound, and a silicone, wherein the amounts of components (C)-(F) are based on 100 parts by weight of components (A) and (B) (note claim 1).

Hayashi et al '377, at column 6, lines 6-32, discloses "a polyethylene modified with a functional group containing compound." However, Hayashi et al '377 fails to specifically disclose a graft-modified ethylene/1-butene copolymer (C) as defined in present claim 11.

Moreover, Hayashi et al '377 only discloses an ethylene/1-octene copolymer having a density of 902 kg/m<sup>3</sup>, which is outside the scope of present claim 11, as the (B) ethylene/  $\alpha$  -olefin copolymer component in the working Examples. Hayashi et al '377 also discloses a modified polyethylene having a melt flow rate of about 0.1 to about 50 g/min and a density in the range of 0.860 to 0.950 g/cm<sup>2</sup> (column 5, lines 63-67) as well as maleic anhydride modified ethylene/hexene-1 copolymer as the (C) polyethylene modified with a functional group containing compound in the working Examples.

Comparing Examples Y1-1 and Y1-2 with Comparative Examples Y1-1, Y1-3 and Y1-4 in Table 3 on page 36 of the specification, it is apparent that compositions in the Examples which satisfy the parameters set forth in present claim 11 are superior to

compositions in the Comparative Examples which do not use a maleic anhydride modified ethylene/  $\alpha$  -olefin copolymer or do use a maleic anhydride unmodified polyethylene having a density outside the range of present claim 11 (that is, densities for the unmodified PE used as the material of modified polymer (C) in Comparative Examples Y1-3 and Y1-4 are 965 kg/m<sup>3</sup> and 920 kg/m<sup>3</sup>, respectively as shown in Table 3). The superior physical properties of the resultant thermoplastic resin composition such as break strength, elongation at break, torsional rigidity, scratch resistance and whitening on bending, are clear from the data in Table 3.

The Examiner asserts at page 7 of the Office Action that the densities for Y2-1 and Y2-2 are not given in Table 3. However, the densities for the polyethylene used in these Examples are described in Table 3 explicitly as 965 kg/kg/m<sup>3</sup> and 920 kg/m<sup>3</sup>, respectively.

Hayashi et al '377 never discloses the use of an ethylene/1-butene copolymer as the (A) component nor the use of an ethylene/1-butene copolymer before graft-modification having a density of 657-890 kg/m<sup>3</sup> as in present claim 11 to produce (C) a graft-modified ethylene/1-butene copolymer which unexpectedly provides improved torsional rigidity and elongation at break of the composition as shown in Table 3 of the specification, thus being particularly suitable for a coating layer on electric wires. The composition as defined in present claim 11 is pliable and flexible and can be readily applied to electric wires.

In view of the above, the §103(a) rejection over Hayashi et al '924 should be reconsidered and withdrawn. Such action is earnestly solicited.

JP 09-221567 to Kensho et al discloses a flame retardant polyolefin resin composition wherein (A) ammonium polyphosphate, (B) a specific amine phosphate or condensed amine phosphate, (C) a nitrogen-containing organic compound and/or (D) a polyhydric alcohol are blended with a polyolefin resin.

As described at page 4, lines 17-27 and at page 5, lines 6-10, of the present specification, polyphosphoric acid absorbs water to reduce electrical resistance gradually due to water absorption and is not suitable as an insulating covering material for electric wire/cable etc. Thus, its application is limited and, therefore, an object of the present invention is to provide a polymer composition having high retardancy without containing a halogen- or phosphorous-based flame retardant, particularly a flame retardant polymer composition suitable as a covering material or sheath for electric wires.

JP '567 is silent with respect to a composition containing no phosphorous-based flame retardant as now defined in present claim 16. Moreover, comparing the properties of a composition in Example Z5 containing smaller amounts of the flame retardant with compositions in Comparative Example Z9, Z10 and Z11 containing higher amounts of the flame retardant but outside the range of present claim 16, it is clear that the formulation of Example Z5 is superior to Comparative Example Z9, Z10 and Z11 in vertical flame test as shown in Table 4 on page 39 of the specification. This result could not have been predicted from the cited reference.

Therefore, claims 16-21 are unobvious over JP '567, and the §103(a) rejection based on this document should be withdrawn. Such action is earnestly solicited.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any

questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (703) 838-6683 at her earliest convenience.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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